National Institute of Environmental Health Sciences

Toward an early warning system for dengue prevention: Modeling climate impact on dengue transmission

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Abstract:

Dengue fever is the most prevalent mosquito-borne viral disease of humans in tropical lands. As an efficient vaccine is not yet available, the only means to prevent epidemics is to control mosquito populations. These are influenced by human behavior and climatic conditions and thus, need constant effort and are very expansive. Examples of succeeded prevention are rare because of the continuous reintroduction of virus or vector from outside, or growing resistance of mosquito populations to insecticides. Climate variability and global warming are other factors which may favour epidemics of dengue. During a pilot study in Claris EC project, a model for the transmission of dengue was built, to serve as a tool for estimating the risk of epidemic transmission and eventually forecasting the risk under climatic change scenarios. An ultimate objective would be to use the model as an early warning system with meteorological forecasts as input, thus allowing better decision making and prevention.

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Resource Description

Early Warning System: ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☑

weather or climate related pathway by which climate change affects health

Ecosystem Changes, El Nino Southern Oscillation, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Global or Unspecified

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Dengue

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Methodology

Resource Type: ☑

format or standard characteristic of resource

Review

Timescale: ☑

time period studied

Time Scale Unspecified